

THURSDAY, APRIL 10, 1879

## JOHANNES MUELLER'S CLASSIFICATION OF PASSERES

*Johannes Müller on Certain Variations in the Vocal Organs of the Passeres that have hitherto escaped Notice.*

The Translation by F. Jeffrey Bell, B.A. Edited, with an Appendix, by A. H. Garrod, M.A., F.R.S. (Oxford, at the Clarendon Press, 1878.) 4to. Plates.

MORE than thirty years ago was this celebrated treatise, now translated by Mr. Bell, published, but without attracting any notice in this country. It is true that some twelve months after the author's investigations were first communicated to the Academy of Sciences of Berlin (June 26, 1845), a brief abstract of them appeared in what was then, as it still is, our leading biological magazine (*Ann. Nat. Hist.*, xvii. p. 499), but no one here seems to have thought them worthy of further attention. Indeed, the principal British ornithologists had so long gone astray in pursuit of that will-o'-the-wisp—the "Quinary System," which seemed to have been revealed to the obscure vision of Vigors, and had so completely mystified themselves with hazy speculations concerning circles, types, affinities, and all the jargon of what was so loudly proclaimed to be the "Natural Arrangement," that it would have been hopeless to expect them to return to the paths of common sense. Their successors had to make the best of what was before them, and that best was obviously to leave it alone: for they doubtless found, even as we find to day, that all which had been written by the Quinarians was hopelessly unintelligible.<sup>1</sup> Preached, however, as this doctrine constantly was, amid terrific maledictions on all who hesitated to receive the "Circular System" as the orthodox faith, they were content to let its results pass unquestioned, and thus the "Natural" Orders and other groups, which were the invention of Vigors and some of his followers, were silently accepted, and they continued to be adopted by most British ornithologists until very recently, if indeed they have now gone wholly to their rest. There is nothing extraordinary in all this. No disputant is so difficult to overthrow as a mystic, and a mystic your Quinarian certainly was. He could, moreover—and the fact is worthy of note, since mystics are seldom so highly accomplished—write long and smooth sentences, irreproachable as to style or grammar, generally not deficient (allowance being made for certain false

<sup>1</sup> The Quinarian system has so completely dropped out of use, that readers of this generation may be at a loss to find out what it really was. We therefore present them with the following "Symbolum Fidei," drawn up by a very orthodox Quinarian (Mr. Neville Wood), in 1836, in the hope that it will convey clear ideas to them:—"The first and fundamental principle inculcated by Macleay and his disciples is, that all nature moves in a circle, and that the series of beings is unbroken; and, secondly, that each group and each species has a double affinity. Every one of the higher groups has a binary division, viz. the normal or typical, and the aberrant, the former containing two, and the latter three, of the five subdivisions of which each of the higher groups is composed. We cannot here explain the doctrine of analogy—which is wholly distinct from affinity—but we can give an instance of it:—the Hedge Duck in the *Sylvia* represents the House Sparrow in the *Fringillide*; that is, the one bears the same relation to the *Sylvia* as the other does to the *Fringillide*, and hence they are said to bear an analogy to each other. The whole zoological series, before arranged in a simple chain, according to this system revolves in an almost infinite number of circles around man, from whom they may be said to degrade on all sides." It is pleasing to observe that a little further on the author states that "no one who supposes the Quinary System, or any part of it, to lead to Atheism, can rightly understand its principles."—*Ornithologist's Text-book*, pp. 30, 31.

premisses) in logical arrangement, sometimes distinctly marked by wit, and always abounding in metaphor. They only lacked a plain meaning. If you pleaded that it was not easy to distinguish the boundaries of the metaphorical and the real, he politely intimated in reply that you were an ass, and deluged you with another torrent of mystic verbiage of the same kind. On raising further objection, your Quinarian began to lose his temper, and, metaphorically shaking "a bunch of fives" (namely, his fist) in your face, discharged at you a volley of well-assorted epithets, about the reality of which there could be no doubt. This is absolutely no exaggeration of some of the characteristics of the Quinarian controversy which may be found in certain publications since 1823, when Vigors unhappily began to apply to Ornithology the senseless fantasies which Macleay had a short time before evolved from the depths of his own imagination. Good work, very good work, was no doubt being done in the meanwhile by some British ornithologists, but the good work was wholly of a limited and special kind. Generalised or broad views were either not taken at all, or, if attempted, were propounded by men of comparatively poor ability, men who were unable to see their way through the baleful fogs that the Quinarian magicians had conjured up around them. It is not too much to say that for some forty years British ornithologists were wandering in a wilderness of words. Temminck's "Manuel d'Ornithologie," the second edition of which was published in 1820, and speedily became well known in England, it is true, kept some, who regarded it as a kind of gospel, from being utterly bewildered by the cloudy dreams of the Quinarians, for Temminck was a simple-minded Dutchman, who had no philosophical or pseudo-philosophical theories to support, no circular visions to relate, and no metaphorical phrases wherewith to encumber his statements. He wrote in French, and if his language appeared to Vieillot not to be the pure French of the Académie Française, it was easily understood by most Englishmen, and he consequently exercised an enormous influence on their mind—an influence which in time produced evil effects, though that is at present no business of ours to show.

During this period of darkness in England there were, however investigators in other lands pursuing what is now obvious to all to have been the right road. Unfortunately their investigations were published so as to be practically inaccessible to our countrymen, and the results at which they arrived were utterly unknown to British ornithologists. Thus we find Strickland, by far the best-informed man of his calling and time, saying, in 1844, that the labours of Wagler<sup>1</sup> and Nitzsch "have not fallen under my inspection." Accustomed as we are in these days to the rapid exchange of publications with our continental brethren, we might regard this at first sight to be a grave shortcoming, but commercial and postal facilities of intercourse with fellow-workers in foreign countries did not exist, and we are prepared to maintain that no very great blame is to be ascribed to British ornithologists of that epoch for not knowing what was being done abroad. The fault lay beyond them. There was first the heavy import duty on foreign books, which pre-

<sup>1</sup> Referring probably to his "Natürliches System" of 1830, for his "Systema Avium" of 1827 had long before been reviewed in England (*Zool. Journ.* iii. p. 465).

vented international booksellers from existing, and made it far more difficult to obtain in London a work published in Paris or Leipzig than it now is to get one that has been printed in Chili or Japan. Next—perhaps it should have been placed first—there was the lamentable fact that so defective was English education, that few boys were taught to read a book in any modern language but their own. Enormous time was wasted at school over Greek and Latin, which, owing to the senseless method of teaching, were, as now, scarcely ever taught to any useful purpose. A smattering of French was sometimes picked up by boys when at home for the holidays, but that was all. German was an utterly unknown tongue. All this is of course notorious. To the ordinary English gentleman it mattered nothing, nor did it signify very much to the literary man, but on the man of science its effect was disastrous, and especially was it so to the naturalist. Most of Cuvier's works had been, it is true, translated, so they were open to all, but this was a very exceptional case. Probably no British ornithologist had ever heard of Merrem, Tiedemann, or Meckel; assuredly no British ornithologist was acquainted with their writings. Yarrell, Macgillivray, and Blyth had each made some advance in certain directions, and the last two were unquestionably not fettered by Quinarian bonds, but their advance was rather that of scouts than that of permanent occupiers. Later came Nitzsch, Dr. Cabanis, and the illustrious author of the work under review—in Germany, and—in Sweden, Sundevall; but still no effect was produced on our insular mind.

It was Nitzsch who first began the great work of critically examining the Linnæan Orders, *Passeres* and *Pica*—the very names of which had passed out of use and were well nigh forgotten in this country, being superseded by the term *Insesores*. In his anatomical contributions to Naumann's excellent "Vögel Deutschland's," a work still far from being appreciated in England, in his treatise on the Carotid Artery of Birds—which unfortunately yet remains in the obscurity of its original Latin, and much more completely in his "Pterylographie"—edited after his death by Dr. Burnmeister, and only translated into English for the Ray Society in 1867—the most important structural differences and affinities between the various forms so classed by Linnæus were clearly shown. The Order *Passeres* (or *Passerina* as Nitzsch called it) was revised and reconstructed, some genera being added and others excluded, while a majority of the Linnæan *Pica* became the *Picaria* of Nitzsch—a very heterogeneous assemblage it must be allowed—the old name being unsuitable, since the genus *Pica* was found to be truly *Passerine*. But Nitzsch had the opportunity of dissecting but few if any of the New-World forms; and consequently he did not know that many American *Passeres* differed essentially from those of the Old World in the structure of their vocal organs. This fact it seems was first ascertained by Macgillivray,<sup>1</sup> but he did not see its importance, which was really recognised by Müller, and the latter's discovery was the cause of the treatise now translated for us after so many years by Mr. Bell, and edited by Mr. Garrod.

<sup>1</sup> Müller in the work under review (Transl., pp. 5 and 6) makes the mistake, which his translator or editor might, we think, have corrected, of attributing the anatomical portions of the "Ornithological Biography," to Audubon! They are admittedly by Macgillivray, who is known to have also helped largely in the composition of that work.

Though ornithologists have by no means followed up Müller's investigations as they deserved, the period that has elapsed since their publication has not been altogether idly passed, and Mr. Garrod has enhanced the value of his coadjutor's translation by adding thereto an appendix bringing the knowledge of the subject almost "up to date," and incorporating the results of his own labours thereon. Müller, however, was no more free from error than his predecessors had been. He divided his "*Passerinen*"—to which he applied the Vigorsian title of *Insesores*—into three tribes:—(1) the *Oscines* or *Polymyodi*, "having the lower larynx formed partly by the trachea and partly by the bronchi, and possessing five or six pairs of muscles attached to the end of certain of the bronchial rings"; (2) the *Tracheophones*, "with the lower larynx formed exclusively by a modification of the lower part of the trachea"; and (3) the *Picarii*, "with the larynx either partly tracheal and partly bronchial, or wholly bronchial and with not more than three pairs of muscles."<sup>1</sup> The *Picarii* of Müller, however, form a group not quite commensurate with the *Picaria* of Nitzsch, and this is a point to which attention should be directed, as, owing to the very slight difference between the two names, one has been frequently written for the other, and the two groups deemed to be identical. Nitzsch very properly excluded what are now known as the *Tyrannidæ* from his *Picaria*, while Müller, as improperly, included them among his *Picarii*. Both authors also erred in their conception of the family *Ampelidæ*, which, in the sense in which it is used by them comprises two very distinct groups, the *Ampelidæ* proper and the *Cotingidæ*. Nitzsch, whose experience had lain with the single European representative of the former, placed the family among his *Passeres*, while Müller, judging it would appear from the New-World genera, which are now more rightly held to compose the *Cotingidæ*, referred the family to his *Picarii*. It is nowadays abundantly clear that the true *Ampelidæ* are very normal *Passeres*, while the *Cotingidæ* are not *Passeres* in the most restricted sense. But it is impossible for us here to go into details. Mr. Garrod's appendix will show how and to what good purpose he, with the abundant opportunities he has enjoyed, has followed Müller's line of research, and has greatly extended it. We certainly wish he had more explicitly set forth, in a tabular form for instance, the general results of his continuous investigations. The want of some such summary is the only serious complaint we have to make against this book; and, regretting as we do its absence, we think we can perceive what has possibly been the motive of his abstention—his consciousness that there is yet much more to be done, that few conclusions drawn at present can be otherwise than general, and that fewer still can be final. On one important point, however, he corroborates what we imagine to have been a singularly interesting discovery of Prof. Huxley's, namely, the divergence of *Menura* (the Lyre-bird) from almost all the other *Passeres*, its only relative (and the relationship can hardly be very close) being *Atrichia*.

Our sincere thanks, and those of every English-speaking ornithologist, are due to all concerned in this book—to Mr. Sclater, whose influence with the Clarendon Press

<sup>1</sup> These definitions are taken from Prof. Huxley (*Proc. Zool. Soc.*, 1867, p. 471), being expressed with his usual admirable terseness.



Delegacy caused it to be undertaken; to Mr. Bell, who seems to have very efficiently performed the actual task of translation;<sup>1</sup> to Mr. Garrod for the Appendix already mentioned; and last, though not least, to Prof. Peters for supplying the use of the very plates which illustrated Müller's work.

### OUR BOOK SHELF

*Proceedings of the London Mathematical Society*, vol. ix. (November, 1877, to November, 1878.) 279 pp. (Hodgson and Son, Gough Square, 1879.)

WE have, in previous notices, indicated the character of the papers contained in former volumes, and the same remarks apply equally well to the volume before us. We shall content ourselves, in our present notice, with giving the titles and author's names only of the more important papers.

Prof. Cayley, not so large a contributor as usual, furnishes a short paper "On the Geometrical Representation of Imaginary Quantities, and the Real ( $m, n$ ) Correspondence of Two Planes," and another equally short, "On the Theory of Groups." There are brief notes "On a Generalised Form of Certain Series," by Mr. Glaisher; "On the Transformation of Elliptic Functions," by Dr. Klein, of Munich; "On Certain Extensions of Frullani's Theorem," by Mr. C. Leudesdorf; "The Flexure of Spaces," by Mr. C. J. Monro; "On the Relation between the Functions of Laplace and Bessel," by Lord Rayleigh; "Notes on Normals," and "The Decomposition of Certain Numbers into Sums of Two Square Integers by Continued Fractions," by Mr. S. Roberts. Longer papers are: "On the Singularities of the Modular Equations and Curves," by Prof. H. J. S. Smith; "On Partial Differential Equations with Several Dependent Variables," and "On a General Method of Solving Partial Differential Equations," by Prof. Lloyd Tanner; "A Method in the Analysis of Plane Curves," by Mr. J. J. Walker; "On Conjugate Four-piece Linkages," by Mr. A. B. Kempe; and "A New Method of finding Differential Resolvents of Algebraical Equations," by Mr. R. Rawson. M. Halphen contributes a long and valuable paper on "The Characteristics of Systems of Conics."

Physical papers are "On the Electrical Capacity of a Long Narrow Cylinder, and of a Disk of Sensible Thickness," by Prof. J. Clerk Maxwell; "On the Conditions for Steady Motion of a Fluid," by Prof. Lamb; "Notes on the Solution of Statical Problems connected with Linkages and other Plane Mechanisms," by Prof. A. B. W. Kennedy; "On the Astatic Conditions of a Body acted on by given Forces," by Prof. Minchin; and "Progressive Waves," by Lord Rayleigh. Mr. H. McColl contributes a paper in two parts bearing on logic and probabilities, viz., "The Calculus of Equivalent Statements."

### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

#### Brorsen's Comet

I OBSERVED Brorsen's comet, about 8h. on March 29, through a whitish haze that extinguished the small stars near it. It appeared about the seventh magnitude, by estimation 3' in

<sup>1</sup> We might take exception, perhaps, to his rendering of the title, which, we think, might have been more literally and better expressed by "On the Hitherto Unknown Diversities of Type in the Singing Organs." &c.

diameter, its light very much condensed in the centre and approximately circular.

On April 4 I obtained the following places, although the moonlight much diminished its brilliancy:—

1874.	G.M.T.	App. R.A.	App. decl.
	h. m. s.	h. m. s.	° ' "
April 4 ...	8 29 59 ...	2 56 53.7 ...	+ 25 42 36
" ...	8 38 31 ...	2 56 55.3 ...	+ 25 42 56

At the first observation the comet was compared with the star Arg. + 25°, No. 485; at the second with Arg. + 25°, No. 496 (Bonn Obs., vol. vi.). The observations admit of more accurate reduction.

The correction to the ephemeris of Herr Schulze (reproduced in NATURE, vol. xix. p. 510) is—

$$\text{In R.A.} \dots - 5^{\circ} \quad | \quad \text{In decl.} \dots - 31''$$

On both evenings when the equatorial was set to the position given in the ephemeris (with Strasser's correction, A.N. 2250) the comet was not in the field of a low power. The above correction to the declination may prevent loss of time in finding the comet.

G. L. TUPMAN

1, Vanbrugh Park, Blackheath, April 6

#### Madagascar Forms in Africa

A PARAGRAPH in a recent number of NATURE (p. 470) mentions the discovery of a new species of *Ouvirandra* in Eastern Africa, the genus being hitherto supposed to be peculiar to Madagascar. The plant in question, which was collected by Dr. Hildebrandt, is, however, as has been pointed out by Dr. Trimmen and myself (*Gardeners' Chronicle*, February 1, p. 149), not a species of *Ouvirandra*, being destitute of the fenestrated leaves, which is the only distinguishing character of that not very sound genus. It is, in fact, a well-known and widely-distributed African plant, *Aponogeton leptostachyus*, E. Mey. Dr. Hildebrandt, when lately in this country, fully assented to this identification.

A more novel fact in the same connection is the discovery by my colleague, Prof. Oliver, of a new monimieaceous plant amongst the collections of Gustav Mann in East Tropical Africa. The order itself, though represented in Tropical America and Asia, has hitherto been unknown in Africa, although the Mascarene Archipelago is well supplied with species, and one at least is known from the Comoro Islands, whence its remarkable fruit was sent to the Kew Museum by Dr. Kirk.

W. T. THISELTON DYER

#### Transportation of Seeds

IN NATURE, vol. xvii. p. 390, which through the carelessness of my agent has only just reached my hands (together with the numbers for August, September, October, and part of November), I see Mr. Francis Darwin notices the penetration of certain grass seeds through the skin of sheep. It may interest him and your readers to know that I can corroborate this from what I have witnessed here and at the Cape of Good Hope.

In passing a butcher's shop in Noumea, lately, I was struck with the appearance of a fore-quarter of mutton. On a closer examination I found it so full of grass-seeds that it resembled a ham just unpacked from its bag of chaff. Many of the seeds had still their long thin tails drawn through the flesh like threads interlacing each other in every direction. On questioning the butcher, he said they rarely killed a sheep that was not more or less punctured.

All our sheep are imported for slaughter from Australia or Norfolk Island. This particular one came from the former place.

At the Cape of Good Hope I have skinned "spring-bucks," in which the shanks were pierced through and through with these "awms" and small thorns. My wonder has been how the animals could endure the pain of moving, but I suppose they do not suffer as we do.

E. L. LAYARD

British Consulate, Noumea, New Caledonia, February 1

#### Rayons de Crépuscule

WHAT does Mr. Abbay call (vol. xviii. p. 540), the "low country" in Ceylon? If he means the sea-board generally, I